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Title: A submission example to Plasma Picture of the Day (PPOD)

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A submission example to PPOD:

Title: Colorful plasma columns (the field-of-views are about 15 cm across)

Authors: Zhehui (Jeff) Wang, Mark F. Makela (Los Alamos National Laboratory), Julia Falkovitch-Khain and Mark Kushner (University of Michigan).



Description: End-on views from a steady plasma column that was about 2 m long. Left, hydrogen gas was used. Right, argon gas was used. The gas pressures were about 0.15 [Torr](#), or 20 [Pa](#). The whitish color of the hydrogen plasma on the left was not expected, since a reddish color, like [The Whirlpool Galaxy in Dust and Stars](#), is more common for hydrogen discharges. The reddish color is due to the [H-alpha](#) line at 656.28 nm. The whitish color was attributed to molecules of hydro-carbon that came from chemical reactive sputtering of a carbon electrode by hydrogen atoms and ions. At the end of each column, the plasmas terminated by dumping charged particles to the wall, resulting in a white glow at a random location.

Imaging method: Canon Powershot SX100 IS, 8.0 Mega Pix with 10x zoom. Built-in lens. Snap shot.

Additional information: Further information about chemical sputtering and other plasma interaction with matter can be found, for example, in the book *Principles of Plasma Discharges and Materials Processing* by M. A. Lieberman and A. J. Lichtenberg. Work supported by Los Alamos National Laboratory LDRD program and US Department of Energy. Contact: zwang@lanl.gov;